

A NEW SPECIES OF *TUBIFICOIDES* LASTOCHKIN
(OLIGOCHAETA: TUBIFICIDAE) FROM
BERMUDA AND THE BAHAMAS

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Abstract.—*Tubificoides bermudae*, new species, is characterized by (1) papillated body wall in postclitellar segments, (2) possession of only bifid setae, 2-3 per bundle anteriorly, 1-2 per bundle in postclitellar segments, (3) vasa deferentia that are about as long as atria, and (4) conical penis sheaths with smooth outline and slightly distended distal end. The species appears closely related to *T. brownae* Brinkhurst and Baker, and *T. motei* Brinkhurst, but is easily distinguished from these by the characteristic shape of its penis sheaths.

While studying the marine oligochaete fauna of Bermuda, the second author encountered a new species of *Tubificoides* Lastochkin at several subtidal stations of muddy sand. The same species was also found in material collected in Bermuda and the Bahamas by Dr. Meredith L. Jones, National Museum of Natural History (USNM), Washington, D.C.

Material and Methods

Specimens were sorted from sand collected at various sites in Bermuda in 1977 and were fixed in Bouin's fluid. Seventeen specimens were sectioned and stained in Azan or Heidenhain's hematoxylin and eosin. The bulk of the individuals were, however, stained whole in paracarmine; 6 of these were dissected, the remaining 33 mounted whole in Canada balsam. Three additional whole-mounted specimens, one from Bermuda and two from the Bahamas, were kindly placed at our disposal from the USNM. The type-series of *T. bermudae* is deposited in the USNM.

Tubificoides bermudae, new species

Figs. 1, 2

Holotype.—USNM 98945, whole-mounted specimen from Smith's Sound (SE

end of Smith's Island), Bermuda, 32°22'08"N, 64°39'25"W, 5 m, muddy fine sand (coll. C. Erséus, 2 Dec 1977).

Paratypes.—USNM 98946-98951, 1 sectioned, 1 dissected and 4 whole-mounted specimens from type locality.

Other material.—USNM 98954, 1 whole-mounted specimen from Blue Hole area, base of causeway, Bermuda, sand (coll. M. L. Jones, Aug 1975). USNM 98952-98953, 2 whole-mounted specimens from Andros Island, Bahamas (coll. M. L. Jones, Mar 1966): 1 from S shore of Fever Cay, Middle Bight, lower intertidal, sand; and 1 from S side of Fresh Creek, "deeper flats with filamentous algae." Second author's collection: 12 sectioned, 5 dissected and 28 whole-mounted specimens collected in Bermuda by C. Erséus (Aug and Dec 1977); 9 worms from type locality, others from 4 different stations, 0.2-15 m depth, largely muddy sands (often with slight smell of H₂S).

Etymology.—The name *bermudae* refers to the geographic origin of most of the material studied.

Description.—Body wide anteriorly, particularly at sexual maturity, behind clitellum abruptly narrower; postclitellar part slender with elongated segments (Fig. 1A). Color greyish red. Length (8 complete, fixed specimens) 6.4-12.3 mm, about 50-60 seg-

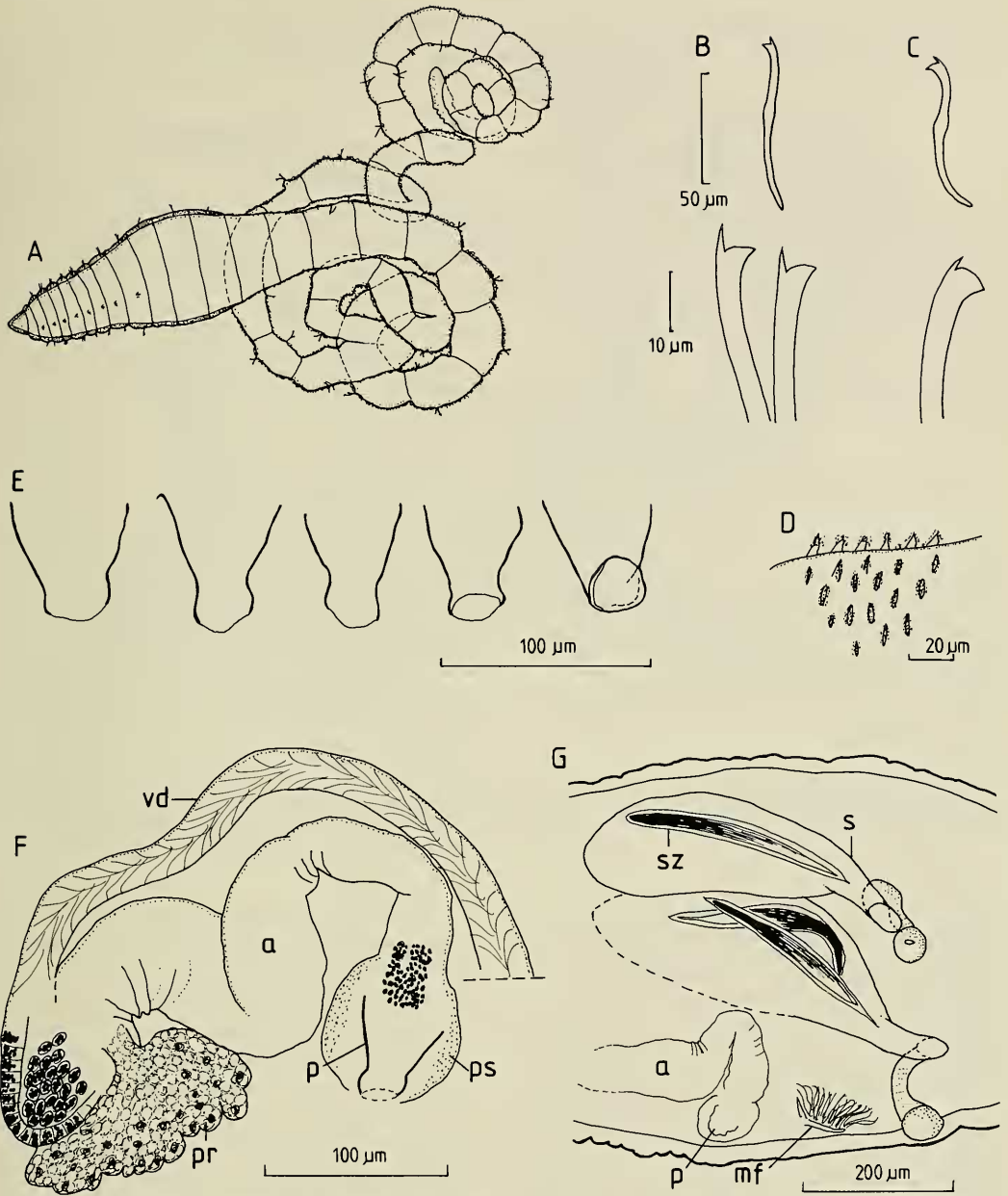


Fig. 1. *Tubificoides bermudae*: A, General outline of whole-mounted, fixed specimen; B, Anterior setae; C, Posterior setae; D, Body wall papillae; E, Penis sheaths from different specimens; F, Male duct from a dissected specimen; G, Spermathecae and parts of male duct, whole-mounted specimen. (a = atrium; mf = male funnel; p = penis; pr = prostate gland; ps = penial sac; s = spermatheca; sz = spermatozeugma; vd = vas deferens.)

ments; posterior end generally not fully differentiated. Width (slightly compressed specimens) 0.26–0.43 mm in V–VI, 0.43–0.78 mm at clitellum, about 0.2–0.3 mm in

XIV–XV. Prostomium conical, shorter than width at base, sometimes partly retracted within peristomium. Clitellum indistinct, extending over XI– $\frac{1}{2}$ XII. In postclitellar

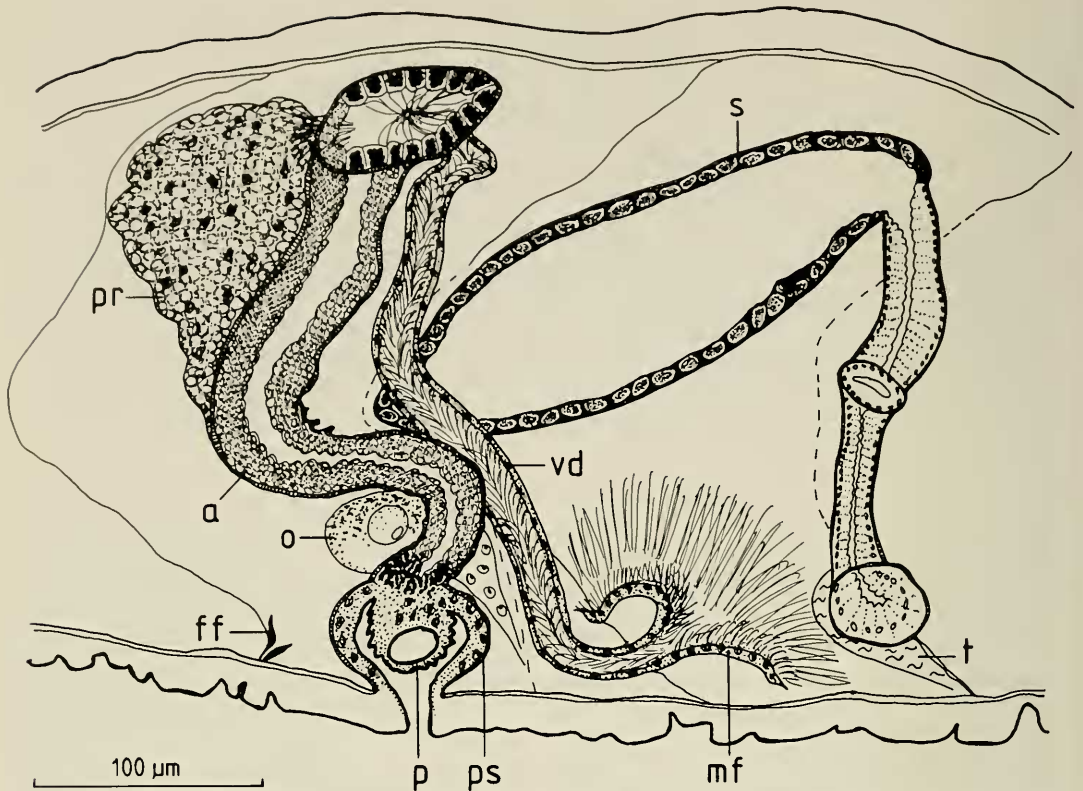


Fig. 2. *Tubificoides bermudae*, lateral view of male duct and spermatheca; reconstruction from a few longitudinal sections. (ff = female funnel; o = ovary; t = testis; other abbreviations as in Fig. 1.)

segments body wall with small, leaf-shaped papillae encrusted with particles of unknown origin (Fig. 1D). Setae (Fig. 1B, C) all bifid; 2–3 per bundle both dorsally and ventrally in II–IX; dorsal, and sometimes ventral, bundles of X–XII represented by 1 seta only, ventrally however, setae often absent; 1–2 per bundle from XIII. Bifids with upper tooth thinner and shorter than lower, more pronounced in posterior segments. Anterior bifids 50–95 μm long, 2–3 μm thick at node, posterior ones 55–75 μm long, 3–4 μm thick. Spermathecal and male pores paired in line with ventral setae, in middle of X and XI, respectively.

Pharyngeal glands in IV–V, poorly developed. Esophagus enlarged in IX. Male genitalia (Figs. 1F, 2) paired. Male funnel large. Vas deferens thin-walled, 22–26 μm

wide, about as long as atrium, entering atrium subapically, opposite to entrance of moderately large, stalked prostate gland. Atrium tubular, about 440 μm long, 33–62 μm wide (measurements from one dissected specimen), apical end ciliated and wider than remaining parts. Atrium histologically tripartite; ental and ectal parts granulated, middle (largest) part not so. Muscle fibers in rings around atrium. Atrium somewhat constricted near base of penis. Penis with conical, distally slightly distended, cuticular penis sheath (Fig. 1E, F, p), enclosed in penial sac. Sheaths with smooth outline, 51–61 μm long, 44–59 μm wide at base, distally 25–31 μm wide; terminal opening round. Spermathecae (Figs. 1G, 2, s) with slender, somewhat coiled duct near opening bearing bulbous swelling, and oblong sac-like am-

pulla; sperm trap present. Spermatozeugmata (Fig. 1G, sz) slender, spindle-shaped, generally with one end less pointed than other.

Remarks.—This species appears closely related to *T. motei* Brinkhurst, 1986, known from Florida, and the widely distributed *T. brownae* Brinkhurst and Baker, 1979, and *T. wasselli* Brinkhurst and Baker, 1979. *Tubificoides motei* and *T. brownae*, however, do not have body wall papillae which characterize the postclitellar segments of *T. bermudae*, and their penis sheaths are clearly different from those of *T. bermudae*. *Tubificoides motei* has conical sheaths tapering to a very narrow distal end, apparently with an oblique opening (cf. Brinkhurst 1986, fig. 3). The sheaths of *T. brownae* are somewhat conical too, but they have an uneven outline and are not smoothly funnel-shaped as those of the new species (cf. Brinkhurst 1986, fig. 2). *Tubificoides wasselli*, which has body wall papillae both anteriorly and posteriorly (not only in postclitellar segments as in *T. bermudae*), is also distinguished from the new species by its penial sheaths; the latter are cone-shaped but have a lateral opening.

Distribution and habitat.—Bermuda and

Bahamas. Lower intertidal and subtidal, generally muddy sands, down to at least 15 m depth.

Acknowledgments

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